CHAPTER 6. NDB PROCEDURES. ON-AIRPORT FACILITY, NO FAF

600. GENERAL. This chapter is divided into two sections: one for low altitude procedures and one for high altitude teardrop penetration procedures. These criteria apply to NDB procedures based on a facility located on the airport in which no final approach fix is established. These procedures must incorporate a procedure turn or a penetration turn. An on-airport facility is one which is located:

a. For Straight-In Approach. Within 1 mile of any portion of the landing runway.

b. For Circling Approach. Within 1 mile of any portion of the usable landing surface on the airport.

601. - 609. RESERVED.

Section 1. Low Altitude Procedures

610. FEEDER ROUTES. Criteria for feeder routes are contained in Paragraph 220.

611. INITIAL APPROACH SEGMENT. The initial approach fix is received by overheading the navigation facility. The initial approach is a procedure turn. Criteria for the procedure turn areas are contained in Paragraph 234.

612. INTERMEDIATE SEGMENT. This type of procedure has no intermediate segment. Upon completion of the procedure turn the aircraft is on final approach.

613. FINAL APPROACH SEGMENT. The final approach begins where the procedure turn intersects the final approach course.

a. Alignment. The alignment of the final approach course with the runway centerline determines whether a straight-in or circling-only approach may be established.

(1) Straight-In. The angle of convergence of the final approach course and the extended runway centerline shall not exceed 30 degrees. The final approach course should be aligned to intersect the extended runway centerline 3000 feet outward from the runway threshold. When an operational advantage can be achieved, this point of intersection may be established at any point between the runway threshold and a point 5200 feet outward from the runway threshold. Also, where an operational advantage can be achieved a final approach course which does not intersect the runway centerline, or intersects it at a distance greater than 5200 feet from the threshold, may be established provided that such course lies within 500 feet laterally of the extended runway centerline at a point 3000 feet outward from the runway threshold. See Figure 55.

(2) Circling Approach. When the final approach course alignment does not meet the criteria for straight-in landing, only a circling approach shall be authorized, and the course alignment should be made to the center of the landing area. When an operational advantage can be achieved, the final approach course may be aligned to pass through any portion of the usable landing surface. See Figure 56.

b. Area. Figure 57 illustrates the final approach primary and secondary areas. The primary area is longitudinally centered on the final approach course, and is 10 miles long. The primary area is 2.5 miles wide at the facility, and expands uniformly to 6 miles wide at 10 miles from the facility. A secondary area is on each side of the primary area. It is zero miles wide at the facility, and expands uniformly to 1.34 miles on each side of the primary area at 10 miles from the facility. When the 5 mile procedure turn is used, only the inner 5 miles of the final approach area need be considered.

c. Obstacle Clearance.

(1) Straight-In. The minimum obstacle clearance in the primary area is 350 feet. In the secondary area, 350 feet of obstacle clearance shall be provided at the inner edge, tapering uniformly to zero feet at the outer edge. The minimum required obstacle clearance at any given point in the secondary area is shown in Appendix 2, Figure 127.

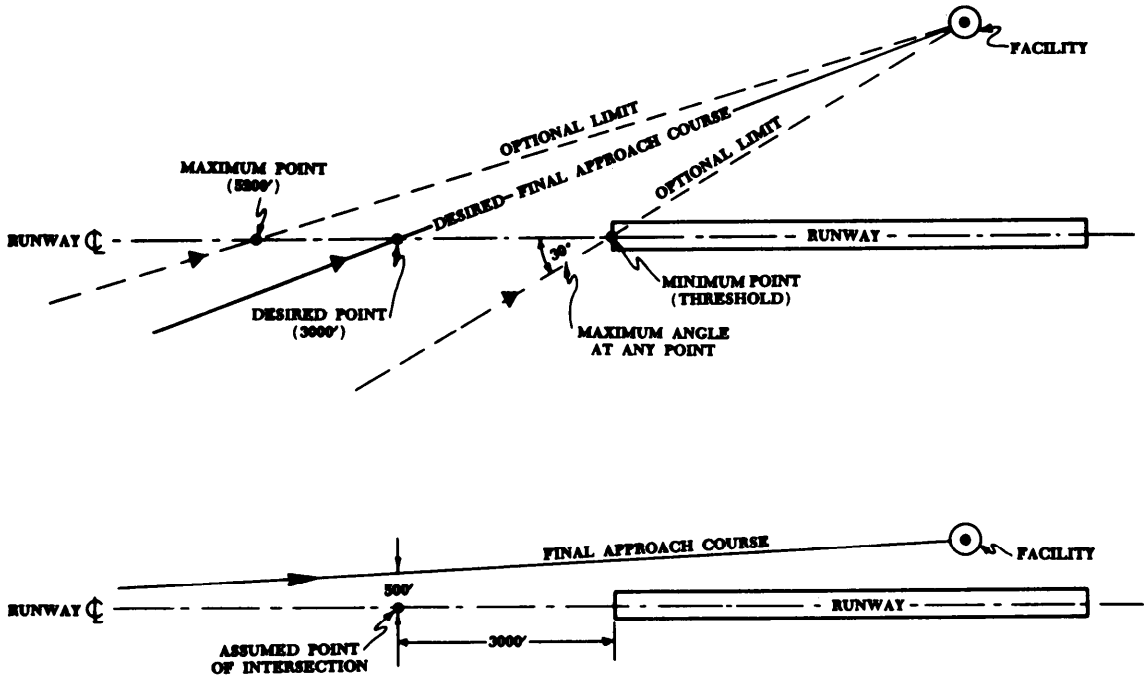

Figure 55. ALIGNMENT OPTIONS FOR FINAL APPROACH COURSE. On-Airport NDB. No FAF. Straight-In Procedure. Par 613.a.(1).

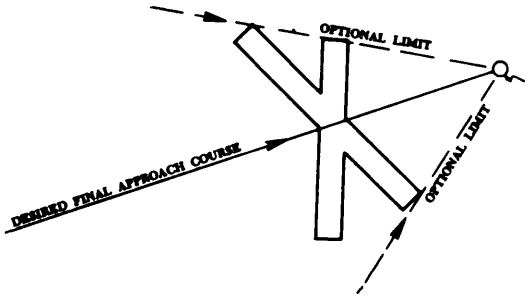

Figure 56. ALIGNMENT OPTIONS FOR FINAL APPROACH COURSE. On-Airport NDB. No FAF. Circling Approach. Par 613.a.(2).

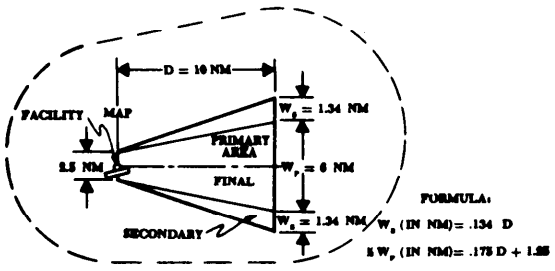

Figure 57. FINAL APPROACH PRIMARY AND SECONDARY AREAS. On-Airport NDB. No FAF. Par 613.b.

(2) **Circling Approach.** In addition to the minimum requirements specified in Paragraph 613.c.(1) above, obstacle clearance in the circling area shall be as prescribed in Chapter 2, Section 6.

d. Procedure Turn Altitude (Descent Gradient). The procedure turn completion altitude shall be within 1500 feet of the MDA (1000 feet with a 5 mile procedure turn), provided the distance from the facility to the point where the final approach course intersects the runway centerline (or the first usable portion of the landing area for "circling only" procedures) does not exceed 2 miles. When this distance exceeds 2 miles, the maximum difference between the procedure turn completion altitude and the MDA shall be reduced at the rate of 25 feet for each one-tenth of a mile in excess of 2 miles.

NOTE: For those procedures in which the final approach course does not intersect the extended runway centerline within 5200 feet of the runway threshold (Paragraph 613.a.(1)), the assumed point of intersection for computing distance from the facility shall be 3000 feet from the runway threshold. See Figure 55.

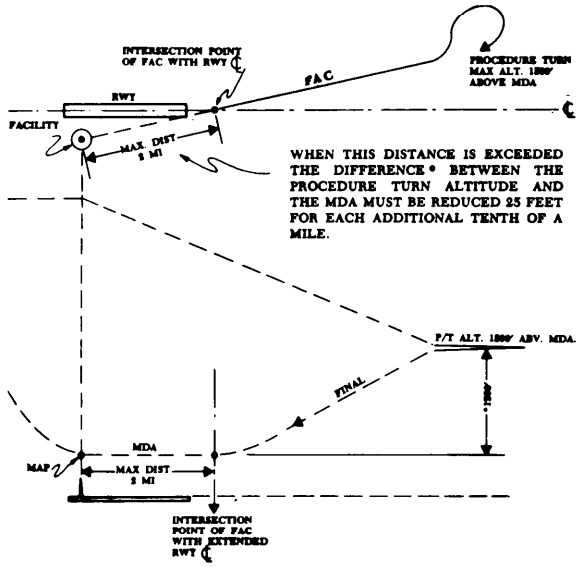

Figure 58. PROCEDURE TURN ALTITUDE. On-Airport NDB, No FAF. Par 613.d.

e. Use of Stepdown Fix. Use of the stepdown fix (Paragraph 288.c.) is permitted provided the distance from the facility to the stepdown fix does not exceed 4 miles. Where the stepdown fix is used the obstacle clearance (Paragraph 613.c.(1)) may be reduced to 300 feet from the stepdown fix to the MAP. See Figure 59, below. See also Paragraph 251.

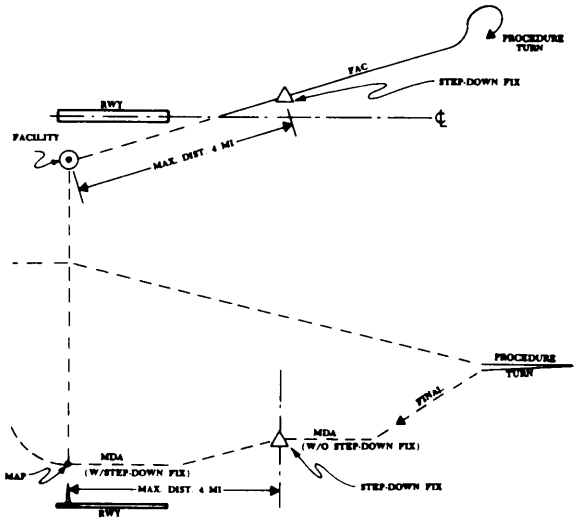

Figure 59. USE OF STEP-DOWN FIX. On-Airport NDB, No FAF. Par 613.e.

f. Minimum Descent Altitude. Criteria for determining the MDA are contained in Chapter 3, Section 2.

614. MISSED APPROACH SEGMENT. Criteria for the missed approach segment are contained in Chapter 2, Section 7. The missed approach point is the facility. See Figure 59. The missed approach surface shall commence over the facility at the required height. See Paragraph 274.

615. - 619. RESERVED.

Section 2. High Altitude Teardrop Penetrations

620. FEEDER ROUTES. Criteria for feeder routes are contained in Paragraph 220.

621. INITIAL APPROACH SEGMENT. The initial approach fix is received by overheading the navigation facility. The initial approach is a teardrop penetration turn. The criteria for the penetration turn are contained in Paragraph 235.

622. INTERMEDIATE SEGMENT. The procedure has no intermediate segment. Upon completion of the penetration turn, the aircraft is on final approach.

623. FINAL APPROACH SEGMENT. An aircraft is considered to be on final approach upon completion of the penetration turn. However, the final approach segment begins on the final approach course 10 miles from the facility. That portion of the penetration procedure prior to the 10-mile point is treated as the initial approach segment. See Figure 60.

a. Alignment. Same as low altitude criteria. See Paragraph 613.a.

b. Area. Figure 60 illustrates the final approach primary and secondary areas. The primary area is longitudinally centered on the final approach course, and is 10 miles long. The primary area is 2.5 miles wide at the facility, and expands uniformly to 8 miles at 10 miles from the facility. A secondary area is on each side of the primary area. It is zero

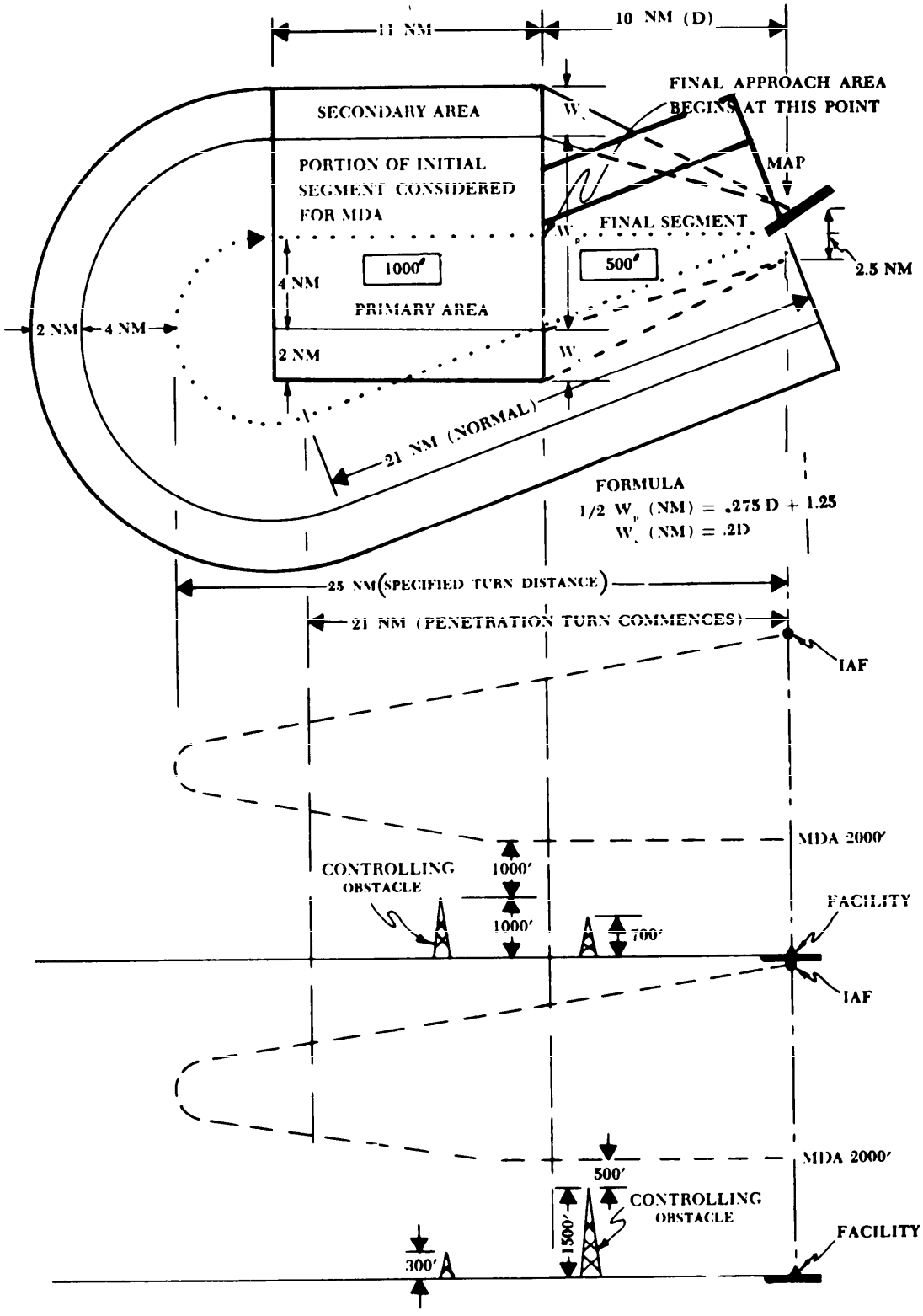

Figure 60. PENETRATION TURN. On-Airport NDB. No FAF. Par 623.

miles wide at the facility and expands uniformly to 2 miles each side of the primary area at 10 miles from the facility.

c. Obstacle Clearance.

(1) Straight-In. The minimum obstacle clearance in the primary area is 500 feet. In the secondary area, 500 feet of obstacle clearance shall be provided at the inner edge, tapering to zero feet at the outer edge. The minimum required obstacle clearance at any given point in the secondary area is shown in Appendix 2, Figure 123.

(2) Circling Approach. In addition to the minimum requirements specified in Paragraph 623.c.(1) above, obstacle clearance in the circling area shall be as prescribed in Chapter 2, Section 6.

d. Penetration Turn Altitude (Descent Gradient). The penetration turn completion altitude shall be at least 1000 feet, but not more than 4000 feet above the MDA on final approach.

e. Use of a Stepdown Fix. Use of a stepdown fix (Paragraph 288.c.) is permitted, provided the distance from the facility to the stepdown fix does not exceed 10 miles. See also Paragraph 251.

f. Minimum Descent Altitude. In addition to the normal obstacle clearance requirements of the final approach segment (see Paragraph 623.c.) the MDA specified shall provide at least 1000 feet of clearance over obstacles in that portion of the initial approach segment between the final approach segment and the point where the assumed penetration turn track intercepts the inbound course. See Figure 60.

624. MISSED APPROACH SEGMENT. Criteria for the missed approach segment are contained in Chapter 2, Section 7. The missed approach point is the facility. See Figure 60. The missed approach surface shall commence over the facility at the required height. See Paragraph 274.

625. – 699. RESERVED.